NEWS FROM ICC JAPAN
13 JULY, 2023

JOINT JAPANESE-GERMAN NEWSLETTER

CONNECTING THE GERMAN AND JAPANESE COMPOSITE INDUSTRY

VOL.001

ICC Innovative Composite Center

CU COMPOSITES UNITED

Joint Japanese-German Newsletter
Connecting the Japanese and German Composite Industry

Dear CU Network,

Welcome to the first Japanese-German Newsletter. After many years of cooperation between CU and ICC, we are very pleased and honored to be able to launch this joint newsletter, which regularly exchanges information between Germany and Japan.
ICC is Japan's largest research and development center for composite materials, and also serves as an under-one-roof open innovation platform where many companies gather.
In the first issue, you will find the research activities and events of ICC and ICC members, as well as the latest topics in the Japanese composites industry.
I hope you will enjoy reading this issue.

Prof./Dr. Kiyoshi UZAWA, ICC Director

TECHNOLOGY UPDATED

JOINT RESEARCH AGREEMENT FOR A NEXT-GENERATION (FLOATING AXIS) OFFSHORE WIND TURBINE DEMONSTRATION PROJECT

Albatross Technology Inc. (Albatross) headed by Professor Akimoto, who is a visiting professor at Kanazawa Institute of Technology, has entered into a joint research agreement for a next-generation (floating axis) offshore wind turbine demonstration project with Electric Power Development Co., Ltd. (J-POWER), Tokyo Electric Power Company Holdings, Inc. (TEPCO HD), Chubu Electric Power Co., Inc. (Chubu Electric) and Kawasaki Kisen Kaisha, Ltd. ("K" LINE).
In this demonstration study, five companies will jointly manufacture a small experimental floating shaft type wind turbine (20 kW class) as a next-generation wind turbine that can be expected to reduce costs and improve the domestic production rate. Floating Axis Wind Turbine (FAWT) is a concept that supports a vertical axis wind turbine with a "rotating" cylindrical floating body based on the original idea of Albatross Technology Co., Ltd. With the floating body miniaturized, we expect a significant reduction not only in manufacturing cost but also in maintenance and operation costs.
Since 2013, ICC has been developing continuous manufacturing technology for blades with the same cross-sectional shape, which is a characteristic of vertical axis wind turbines, under the COI project (a research and development project supported by the Ministry of Education, Culture, Sports, Science and Technology). We will continue to work together with them as a cooperative institution.

Learn more from :

Albatoross Technology Inc. HP

ICC's research work

NEXT-GENERATION WIND POWERED VESSEL EQUIPPED WITH “WIND CHALLENGER” STARTED ITS COMMERCIAL OPERATION ON OCTOBER 7, 2022.

After 13 years since the Wind Challenger Project was started by the University of Tokyo and Japanese major shipping companies in 2009, the Next-Generation wind powered vessel equipped with "Wind Challenger" was finally completed to meet the urgent global need for the low carbon society.

The Wind Challenger is a system to convert wind energy directly to a vessel propulsion force with a telescopic and rotating hard sail. In the project, ICC developed a manufacturing technology of FRP panels to be mounted on the hard sail and carried out many evaluation test. In 2022, the first vessel finally completed and started its commercial operation with the achievement of a significant reduction in GHG emission.

Professor Kiyoshi Uzawa, Director of ICC and Visiting Professor Kazuyuki Ouchi (Representative Director of Ouchi Ocean Consultants Co., Ltd.) received the 2022 Japan Society of Naval Architects and Ocean Engineers Award (Invention). He was recognized for his contribution to the sophistication of marine engineering technology through his research on the invention of a vertically telescopic hard sail, which is unprecedented in the world.

Also, SHOFUMARU won The Ship Of The Year 2022 Award in Japan given by the Japan Society of Naval Architects and Ocean Engineers (JASNAOE)

Photo from left: Professor Kiyoshi Uzawa, (ICC Director), Dr.Kazuyuki Ouchi (Ouchi Marine Consultant/KIT Visiting Professor),

Commemorating the completion, ICC received a 1/400 model of “SHOFUMARU”, name of the first vessel, (approximately 60 cm in length) from Mitsui O.S.K. Lines, Ltd.(MOL), owner of the ship.

Presenting ceremony on Dec.19 ,2022

Learn more from :

ICC's reasearch work

Wind Challenger Project

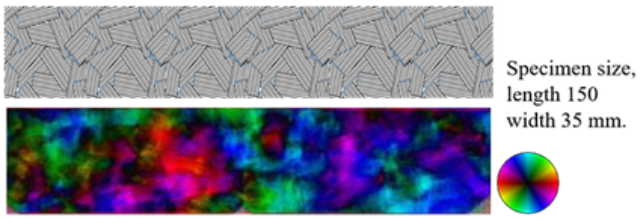
MOL website

Ship of the Year Award 2021

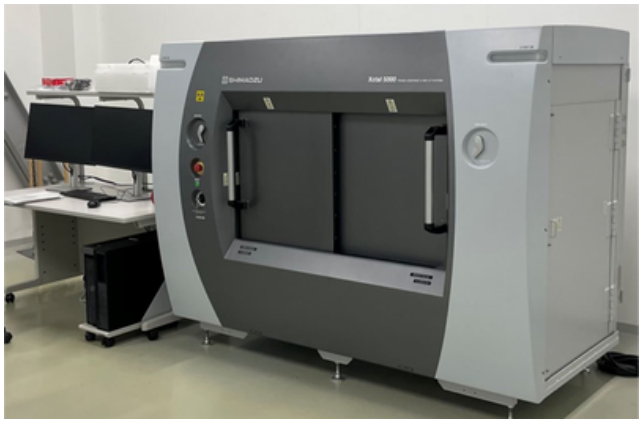
THE PHASE-CONTRAST X-RAY CT SYSTEM, FIRST DEVELOPED IN JAPAN, WAS INSTALLED AT ICC, ENABLING ADVANCED STRUCTURAL ANALYSIS OF COMPOSITE MATERIALS.

The phase-contrast X-ray CT system can take an image of microscopic scattering and refraction of X-rays that pass through an object using the diffraction gratings. Its feature is that it can observe micro damage and fractures inside fiber composite molded products and analyze fiber orientation, which cannot be observed with the conventional X-ray CT. ICC and Shimadzu Corporation had conducted joint research on applying the phase-contrast X-ray CT system to the structural analysis of fiber composite materials. And Shimadzu Corporation was the first company in Japan to sell a mass-produced phase-contrast X-ray CT system, and ICC installed the first machine this March.

ICC's research focuses on fiber orientation analysis of cut tape laminated CFRP molded products. In recent years, the fiber orientation analysis inside molded products has been performed by image analysis using X-ray CT equipment. But, there is a drawback the observation range is only a few millimeters, which is extremely small. However, the phase-contrast X-ray CT system can analyze the fiber orientation distribution of the specimen size by transmission observation. The FEM model of the material's physical properties constructed with this fiber orientation is in good agreement with the actual mechanical test, demonstrating that an appropriate fiber orientation analysis can be obtained. This fiber orientation analysis technology can greatly contribute to the structural analysis of fiber composite molded products.



Fiber orientation vector color map



Learn more from :

Product information

Development story

EVENT

(REVIEW) JAPAN-GERMAN NETWORKING FORUM IN MARCH 2023

Since 2020, ICC had been working on an international joint R&D project with Japanese and German companies and institutions. The G-J joint project consisted of two projects: "ThermoPros," which focused on the continuous molding process of thermoplastic composites, and "HiPeR" focused on recycled materials. As the three-year project period was coming to an end, members of the German project team visited Japan for a face-to-face closing meeting to summarize the project and to discuss future activities.

To promote networking between German and Japanese researchers on the occasion of their visit to Japan, the Japan-Germany Networking Forum was held on March 28, 2023, hosted by the Innovative Composites Center (ICC) at the Kanazawa Institute of Technology and co-hosted by Ishikawa Prefecture, the Ishikawa Sunrise Industries Creation Organization (ISICO), and the Hokuriku Advanced Composite Materials Association (HACM).

(UPCOMING) SAMPE-JAPAN JISTES KYOTO 2023

SAMPE-Japan International Conference for composites, JISTES Kyoto 2023 will be held on 20th & 21st July 2023. ICC Director Prof. Uzawa is chairing the organizing committee, and many lecturers from overseas will visit Japan for the two-day event. Based on the trend toward carbon neutrality, lectures will be given on cutting-edge technologies from new material technologies to application technologies in the automotive and aerospace fields. The conference will take place at Doshisha University in Kyoto and coinciding with the Gion Festival, the participants would be able to enjoy a taste of the city of Kyoto in the midst of the festival.

Program of JISTES

ABOUT ICC

The Innovative Composite Materials Research and Development Center (ICC) is an affiliated research institute of Kanazawa Institute of Technology, which was founded in March 2014 under the "International Science Innovation Center Project" of the Ministry of Education, Culture, Sports, Science and Technology (MEXT).
ICC has a mixture of a university's academic research institutions and a company's manufacturing facilities, commiting to the missions of :

- Research on the application of composite materials in a wide range of fields
- Development of value chains and support for product development in collaboration with companies
- Human resource development and education combining theory and practice
- International collaboration between overseas research bases and universities/industrial clusters

ICC is an open innovation environment that serves as a "place" platform for these R&D, educational and collaborative activities.

FLearn more from : ICC homepage
Publications

ICC
Innovative Composite Center

CONTACT
Innovatice Composite Center
2-2 Yatsukaho Hakusan Ishikawa
icc-spt@mlist.kanazawa-it.ac.jp